WHAT IS CLAIMED IS:

1. An instrumented rolling bearing (1) of the type including a non-rotating ring (2), a rotating ring (3), at least one row of rolling elements (4) positioned between two raceways of the rotating (3) and non-rotating (2) rings, and an information sensor assembly comprising a non-rotating sensor unit (7) and a rotating encoder (8) provided with an active part, the encoder and the sensor unit being separated by a gap, characterized in that the encoder (8) includes a substrate (16) made of electrically non-conducting material and an electrically conducting thin layer (17) supported by the substrate, the substrate (16) rotating as one with the rotating ring (3).

2. The device as claimed in claim 1, characterized in that the substrate (16) is annular.

3. The device as claimed in claim 2, characterized in that the substrate (16) has the overall shape of a disk.

4. The device as claimed in any one of the preceding claims, characterized in that the sensor unit (7) includes at least one inductive sensor.

5. The device as claimed in any one of the preceding claims, characterized in that the sensor unit (7) includes at least one microcoil.

6. The device as claimed in any one of the preceding claims, characterized in that the electrically conducting thin layer (17) includes a plurality of angular sectors (18) separated from one another.

7. The device as claimed in any one of claims 1 to 5, characterized in that the electrically conducting thin layer (17) is circularly continuous.

8. The device as claimed in claim 7, characterized in that the electrically conducting thin layer (17) is delimited by two circles which are eccentric with respect to one another.

9. The device as claimed in any one of the preceding claims, characterized in that the substrate (16) is pushed onto a land (3f) of the rotating ring (3).

10. The bearing as claimed in any one of the preceding claims, characterized in that the substrate (16) is bonded to the rotating ring (3).

11. The bearing as claimed in any one of claims 1 to 8, characterized in that the substrate (16) is trapped against a radial surface of the rotating ring (3).

12. The bearing as claimed in any one of the preceding claims, characterized in that it includes an encoder support (26) mounted on a cylindrical surface of the rotating ring.